Listing of the Claims:

The following is a complete listing of all the claims in the application, with an indication of the status of each:

1. (Original) A method for determining the refractive index and/or compensation of the influence of refractive index during interferometric length measurements with the aid of an interferometer (13, 13') to which there are applied at least two measuring beams (v_2, v_3) having at least defined frequencies approximately at a harmonic ratio to one another, and at whose output phases for the at least two measuring beams (v_2, v_3) are evaluated, the interferometric phases being multiplied in an interferometrically fashion corresponding to the harmonic ratio of the frequencies of the measuring beams (v_2, v_3) and at least one phase difference of the phase values thus formed being examined, characterized in that at least one of the measuring beams (v_3) is of variable frequency, and in that from the phase difference formed a control signal is formed in order to vary the frequency of the variable frequency measuring beam (v_3) and is used to control the frequency such that the phase difference vanishes.

2. (Original) The method as claimed in claim 1, characterised in that at least one reference beam (v_1) is generated at a frequency that corresponds approximately to the frequency of one of the measuring beams (v_3) and is coupled to the frequency of another measuring beam (v_2), and in that a frequency difference is measured between the frequency of the reference beam (v_1) and the frequency of the corresponding measuring beam (v_3).

3. (Original) The method as claimed in claim 2, characterized in that o ne of the measuring beams (v_2) and the reference beam (v_1) are generated by a coherent radiation source (L1) with a frequency multiplier.

4. (Previously Presented) The method as claimed in claim 1, characterized in that the two measuring beams (v_2, v_3) are derived from a beam of a coherent radiation source (L1) by means of a frequency splitter (36).

5. (Previously Presented) The method as claimed in claim 1, characterized in that high frequencies (Ω, 2Ω) that are at the same harmonic ratio to one another as the frequencies of one of the measuring beams (v_2) to the reference beam (v_1) are modulated onto the superimposed measuring beams (v_2, v_3) in a reference branch of the interferomater (13').

6. (Previously Presented) An interferometer arrangement for carrying out the method as claimed in claim 1, having at least one coherent radiation source (L1, L2) for generating at least two measuring beams (v_2, v_3) having defined frequencies approximately at a harmonic ratio to one another and having an interferometer (13, 13') whose output signals are passed to a beam splitter (DST 13, DST 22, DST 32,) separating the measuring beams, the separated measuring beams being passed to optoelectronic transducers (PD12, PD13; PD22, PD23; PD32, PD33), and at least one of the output signals the optoelectric transducers being fed to a multiplier (16, 22, 32) corresponding to the harmonic ratio of the frequencies of the measuring beams (v_2, v_3), characterized in that the frequency of at least one of the measuring beams (v_3) can be varied by means of a frequency controller (18, 23, 35), and in that a phase comparator (17, DBM) for the phases of the output signals of the optoelectric transducers (PD12, PD13, PD22, PD23, PD32, PD33) is used to generate a control signal representing a phase difference, which control signal is fed to the frequency controller (18, 23, 35) to form a control loop for the interferometric phases (ϕ_2, ϕ_3).

7. (Original) The interferometer arrangement as claimed in claim 6, characterized in that the coherent radiation source (L1, L2) is designed to generate at least one reference beam (v_1) whose frequency corresponds approximately to the frequency of one of the measuring beams (v_3) and is harmonically coupled to the frequency of another measuring beam (v_2).

8. (Previously Presented) The interferometer arrangement as claimed in claim 6, characterized by a frequency multiplier assigned to a coherent radiation source (L1, L2).

9. (Previously Presented) The interferometer arrangement as claimed in claim 6, characterized in that use is made in a reference branch of the interferometer (13, 13') of a frequency modulator (30) whose controller is connected to a high frequency generator for two high frequencies (Ω, 2Ω) whose frequency ratio to one another is that of the frequencies of the measuring beams (v_2, v_3).